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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/557,824

11/23/2005

Tomohiro Inoue

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EXAMINER

HAN, KWANG S

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

08/20/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/557,824	Applicant(s) INOUE ET AL.	
	Examiner Kwang Han	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,3,8 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

SEPARATOR FOR FUEL BATTERY

Examiner: K. Han SN: 10/557,824 Art Unit: 1795 August 20, 2009

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 4, 2009 has been entered.
2. The Applicant's amendment filed on June 4, 2009 was received. Claims 1 and 7 were cancelled. Claims 2, 3, 8, and 9 were amended.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

4. The claim rejections under 35 U.S.C. 112, second paragraph, on claims 1-3 and 7-9 are withdrawn, because claims 1 and 7 has been cancelled and claims 2, 3, 8, and 9 has been amended.

Claim Rejections - 35 USC § 103

5. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Sasaki et al. in view of Inoue on claims 1 and 7 is withdrawn, because claims 1 and 7 have been cancelled.

6. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (US 6337120) in view of Chow et al. (WO 94/09520) and Saito et al. (US 6686083).

Regarding claims 2 and 8, Sasaki discloses a separator for a fuel cell (1:6-13; 4:19-27) comprised of the following:

- a separator main body made of a mixture of carbon powder and resin (4, 32-36),
- a gasket made of a perfluoro or ethylene-propylene-diene rubber (4:46-50; 7:49-54) and provided with lip portions on upper and lower surfaces (5:49 - 6:58; Figure 6),
- the separator main body provided on both surfaces with gasket forming grooves (Figure 6), and
- gasket forming grooves being provided with a through hole (Figure 6).

Sasaki is silent towards the separator resin to be a thermosetting resin and the grooves inclined downwardly to central parts of the groove to form an inclined shape.

Chow et al. teaches the use of a separator (44, 50) for a fuel cell with a shape inclined downwardly to central parts of the groove (Figure 5) for the benefit of

Art Unit: 1795

accommodating preformed gaskets to be disposed (Page 7, Lines 14-18). It would have been obvious to one of ordinary skill in the art at time of the invention to apply Chow's inclined shapes gasket channels in Inoue's fuel cell separator because Chow teaches it provides for the benefit of minimizing changes in position or separation of the gasket when sealing the fuel cell.

Saito teaches a separator for a fuel cell comprising a carbonaceous composite material including a thermosetting resin to form a separator with superior strength, immune to warpage, and superior in vibration and shock resistance (1:47-54; 2:25-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a thermosetting resin in the material composition for the separator because Saito teaches this resin helps form a separator with superior strength, immune to warpage, and superior in vibration and shock resistance.

7. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. in view of Saito et al. and Ishigaki et al. (JP 2000-356267).

Regarding claims 3 and 9, Sasaki discloses a separator for a fuel cell (1:6-13; 4:19-27) comprised of the following:

- a separator main body made of a mixture of carbon powder and resin (4, 32-36),
- a gasket made of a perfluoro or ethylene-propylene-diene rubber (4:46-50; 7:49-54) and provided with lip portions on upper and lower surfaces (5:49 - 6:58; Figure 6),

Art Unit: 1795

- the separator main body provided on both surfaces with gasket forming grooves (Figure 6), and
- gasket forming grooves being provided with a through hole (Figure 6).

Sasaki discloses a seal with a gasket but is silent as to a curvature provided in the corner positions of the groove bottom surfaces and the separator resin to be a thermosetting resin. Sasaki and Ishigaki et al. are analogous art because both deal with sealing of components performed by a gasket and a matching groove.

Saito teaches a separator for a fuel cell comprising a carbonaceous composite material including a thermosetting resin to form a separator with superior strength, immune to warpage, and superior in vibration and shock resistance (1:47-54; 2:25-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a thermosetting resin in the material composition for the separator because Saito teaches this resin helps form a separator with superior strength, immune to warpage, and superior in vibration and shock resistance.

Ishigaki et al. teaches the use of a fluid seal with a gasket (1) and a curvature provided in a corner of the groove bottom position [Abstract, 0001] (Drawing 1) for the benefit of providing an excellent fluid sealing performance at low loads to lengthen the service life of a device. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Ishigaki's fluid seal with a curved bottom position in the groove in Inoue's separator for the benefit of forming an excellent seal with the gasket at low loads to lengthen the service life of the fuel cell.

Response to Arguments

8. Applicant's arguments filed June 4, 2009 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) the Chow reference does not show the gaskets being integrally formed on the sheets by an injection molding process and the inclined grooves are not provided in order to prevent the bottom walls of the sheet from being punched out by injection molding,

(b) the Ishigaki reference teaches the seal and attaching member are formed independently and there is no problem that the bottom wall of the groove is punched out by high pressure injection molding.

Art Unit: 1795

In response to Applicant's arguments, please consider the following comments:

(a) the Chow reference meets the structural limitations of the claims as presented. The arguments as to the intended use of the apparatus as claimed do not negate the teachings in the reference,

(b) the Ishigaki reference meets the structural limitations of the claims as presented.

The motivation to modify the structure of Sasaki and Saito with Ishigaki is also presented in the rejection above. The arguments as to the intended use of the apparatus as claimed do not negate the teachings in the reference.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./

Examiner, Art Unit 1795

/Dah-Wei D. Yuan/

Supervisory Patent Examiner, Art Unit 1795